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EXAMINER
MILLS, DONALD L

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/629,219	SHABTAY ET AL.	
	Examiner	Art Unit	
	Donald L Mills	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,20-43 and 45-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17,20-43 and 45-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 14-17, 20-26, 28, 38, 39, and 41-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Gleeson et al. (US 5,959,989), hereinafter referred to as Gleeson.

Regarding claim 14, Gleeson discloses a method for efficiently distributing multicast messages having group destination address to subscribing entities in a computer network, which comprises:

Receiving a multicast packet by the switch through a first physical port on a first VLAN (Referring to Figure 2A, intermediate device 221 receives a multicast packet through port 4 for a given VLAN. See column 10, lines 22-33 and column 8, lines 4-6.)

Routing the multicast packet in layer-3 out a second physical port of the switch, on the first VLAN (Referring to Figure 2A, the multicast packet is routed out port 3 in layer-3 on the VLAN. See column 12, lines 25-27.)

Wherein the multicast packet is bridged in layer-2 through a third physical port of the layer-3 switch (Referring to Figure 2A, the multicast packet is bridged in layer-2 via switch 221 through port 2 to the layer-3 router 226.)

Regarding claim 15, Gleeson discloses decrementing the TTL. See col. 13, line 52.

Regarding claim 16, Gleeson discloses as shown in Fig. 2A, port 3 on device 221 leads to a layer-3 router.

Regarding claim 17, Gleeson discloses as shown in Fig. 2A, the connection between port 3 of device 221 and port 4 of device 222 is not bridged.

Regarding claim 20, Gleeson discloses a method for efficiently distributing multicast messages having group destination address to subscribing entities in a computer network, which comprises:

Receiving the multicast packets by a first switch connected to the VLAN (Referring to Figure 2A, intermediate device 221 receives a multicast packet through port 4 for a given VLAN. See column 10, lines 22-33 and column 8, lines 4-6.)

Routing the multicast packets in layer-3 to a second switch connected to the VLAN (Referring to Figure 2A, the multicast packet is routed out port 3 of switch 221 in layer-3 on the VLAN to switch 222. See column 12, lines 25-27.)

Routing the multicast packets in layer-3 to the second switch through an interface included in the VLAN (Referring to Figure 2A, the multicast packet is routed out port 3 of switch 221 in layer-3 on the VLAN to switch 222. See column 12, lines 25-27.)

Regarding claim 21, Gleeson discloses as shown in Fig. 2A, the packet can be routed to the host 34.

Regarding claim 22, Gleeson discloses as shown in Fig. 2A, the packets can then be routed to a third switch, 223.

Regarding claim 23, Gleeson discloses a method for efficiently distributing multicast messages having group destination address to subscribing entities in a computer network, which comprises:

Receiving multicast packets of a specific destination address and source address by a first switch connected to the VLAN (Referring to Figure 2A, intermediate device 221 receives a multicast packet through port 4 for a given VLAN, the IP comprising a destination and source address. See column 10, lines 22-33 and column 8, lines 4-6.)

Routing the received multicast packets in layer-3, by the first switch, to at least one first host connected to the VLAN (Referring to Figure 2A, the multicast packet is routed out port 5 of switch 221 in layer-3 on the VLAN to the hosts. See column 12, lines 25-27.)

Receiving multicast packets of the specific destination address and source address by a second switch connected to the VLAN (Referring to Figure 2A, the multicast packet is routed out port 3 of switch 221 in layer-3 on the VLAN to switch 222. See column 12, lines 25-27.)

Routing the multicast packets in layer-3, by the second switch, to at least one second host (Referring to Figure 2A, the multicast packet is routed out port 2 of switch 222 in layer-3 on the VLAN to host 34. See column 12, lines 25-27.)

Regarding claim 24, the first MND 226 is connected directly to host 31.

Regarding claim 25, as mentioned previously, a packet can be sent from device 221 to device 222.

Regarding claims 26 and 28, Gleeson discloses a method for efficiently distributing multicast messages having group destination address to subscribing entities in a computer network, which comprises:

A plurality of ports (Referring to Figure 2A, switch 221 comprises ports 1-5.)

A layer-2 bridging unit which bridges packets between the ports responsive to their destination MAC address and their VLAN (Referring to Figures 2A and 6, switch 221 bridges packets between ports based upon their destination MAC address and their VLAN identifier. See column 18, lines 53-64.)

A multicast detector which identifies a group of at least some of the IP multicast routing related packets received by the switch, the group including IGMP queries, and prevents the layer-2 bridging unit from bridging the identified packets at least through ports which do not lead to at least one neighboring layer-3 switch or router (Referring to Figure 2A, switch 221 detects multicast packets, including IGMP queries, and forwards them to corresponding MND 226 and not to ports that are not connected to MND 226, such as, ports 1, 4, and 5. See column 9, lines 46-50. Therefore, switch 221 prevents IGMP queries from transmission through ports 1, 4, and 5, which does not lead to a neighboring router.)

Regarding claim 38, Gleeson discloses a method for efficiently distributing multicast messages having group destination address to subscribing entities in a computer network, which comprises:

At least one VLAN interface which does not have an associated IP router interface

A layer-3 output unit which directs IP packets with a MAC source address of the switch through the at least one VLAN interface

Wherein the layer-3 output unit directs packets through the at least one VLAN interface, with an IP source address associated with a different VLAN interface of the switch (Referring to Figure 2A, the MND 226 is a type of layer-3 switch that directs packets to either the R, G, or B

VLAN interfaces. The MND 226 does not have an associated IP router interface. The distribution of messages also uses the MAC address derived from the IP destination address. The router forwards multicast IP packets with a source address corresponding to host 33 through port 1. See col. 12, lines 36-44.)

Regarding claim 39, as mentioned previously, the MND 226 is capable of handling IP packets routed in layer-3.

Regarding claims 41 and 42, Gleeson discloses that packets like DVMRP, PIM-SM, and PIM-DM can be sent (packets of a routing protocol). See col. 9, lines 23-26.

Regarding claim 43, Gleeson discloses that leave and join packets can be sent (IP multicast control packets). See col. 9, line 65.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-13, 27, 29-37, 40, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gleeson et al. (US 5,959,989), hereinafter referred to as Gleeson, in view of Virgile (US 5,898,686).

Regarding claims 1, 2, and 48, Gleeson discloses a method for efficiently distributing multicast messages having group destination address to subscribing entities in a computer network, which comprises:

Dividing the LAN to a number of segments larger than the number of virtual LANs (VLANs) in the network (Referring to Figure 2A, computer network 200, which includes a plurality of local area networks 204-214. See column 7, lines 50-59. The Examiner interprets each of these LANs as a "segment" of a larger LAN. The intermediate devices 220-223 are capable of establishing segmented virtual local area networks (VLANs) by associating various groups of LANs 204-214. See column 8, lines 4-8. Based upon the Examiner's interpretation, if LAN segments make up the VLANs, then there must be more segments then VLANs.)

Gleeson does not expressly disclose *creating a layer-3 multicasting routing table, which relates to each of the segments separately.*

Virgile teaches a table 200 as shown in Figure 4 for multicasting IP packets (layer-3 multicasting routing table). The multicast destination address index field contains a multicast destination address of a particular multicast group with a corresponding I/O interface identifier in the I/O interface field (See column 7, lines 50-60.) As seen in Figure 3, each I/O interface **141-144** corresponds to one of three distinct and separate network segments **L100-102** for receiving and transmitting packets according to the protocol network segment to which the I/O interface is attached (See column 7, lines 10-13.) Therefore, Virgile teaches a multicasting routing table which relates to each of the network segments separately based upon the network segment's matching I/O interface.

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the multicasting table of the LAN segments of Virgile in the intermediate devices of Gleeson. One of ordinary skill in the art would have been motivated to do so in order to only transmits on network segments on routes to hosts that are members of the corresponding

multicast groups, thereby, reducing traffic flow and bandwidth. An added benefit of doing so would result in reduced network congestion and costs due to decreased network traffic.

Regarding claim 2 more specifically, the purpose of the table in Virgile is so that the packets that match the entries in the table will be routed to the correct destination.

Regarding claim 3, the primary reference further teaches that the VLAN designation table associates each port of the device with the VLAN designation. See col. 8, lines 19-23.

Regarding claim 4, the primary reference further teaches identifying subscribing VLAN ports in the forwarding table 250. The group forwarding table preferably associates each group multicast address with the VLAN designations of the subscribing entities and the port numbers used to reach those entities (legal interface). See col. 10, lines 22-34.

Regarding claim 5, the primary reference further teaches, as shown in Fig. 2A, some of the LAN segments are different physical places from the other LAN segments. For example, LAN 204 and LAN 212 are not in the same physical location.

Regarding claim 6, the primary reference further teaches dividing VLAN Orange (O) of the LAN into a plurality of segments on LANs and trunk lines 207, 230, 232, 234, and 210 in Fig. 2A.

Regarding claim 7, the primary reference further teaches, as shown in Fig. 2A, the different LAN segments with 2 or more hosts connected are all connected on different segments.

Regarding claim 8, the primary reference further teaches that a backbone segment such as 230 in Fig. 2A that includes all the links for each VLAN that connects switches 220 and 221. Gleeson et al. discloses that external ports are used on 230 implies this backbone segment.

Regarding claim 9, the primary reference further teaches that each VLAN can be divided such that non backbone segments connect one or more hosts to each layer-3 switch, such as 208 in Fig. 2A that connects 3 hosts in the Green VLAN to layer-3 switch 221.

Regarding claim 10, the primary reference further teaches making the determination whether to distribute messages in that particular VLAN segment. See col. 11, lines 27-42.

Regarding claim 11, the primary reference further teaches that the multicast management conforms to IGMP. See col. 8, line 63.

Regarding claims 12 and 13, the primary reference further teaches the layer-3 switches, the MNDs 226 and 228, will not perform layer-2 switching, which is done by intermediate devices 220-223. See col. 7, lines 50-59.

Regarding claim 27, it is well-known that a bridge can act as a filter and not select certain packets to pass. It would have been obvious to include this feature into modified Gleeson et al. system. One would have been motivated to do this because certain packets should not be transmitted in order to save on bandwidth.

Regarding claims 29 and 30, the modified version of the switch in Gleeson et al. would include the ability to bridge the identified packets through a plurality of ports in the subset of ports.

Regarding claim 31, Gleeson et al. discloses supporting DVMRP, PIM-SM, and PIM-DM. See col. 9, lines 23-26. With multiple protocols, it is inherent that the switch is response to these protocols.

Regarding claims 32 and 33, Gleeson et al. discloses distributing multicast messages that include control and routing related packets. The group of packets identified also configured for all its VLANs. See col. 9, lines 18-19.

Regarding claim 34, Gleeson et al. discloses the MND, which uses the multicast controller 306. It also routes at least IP related packets between ports of the same VLAN.

Regarding claims 35, 36, and 37, the modified version of Gleeson et al. discloses that the bridging capabilities will prevent certain packets from being forwarded, irrespective of their destination addresses.

Regarding claim 40, Gleeson et al. does not expressly disclose generating IP packets at a higher layer in the switch; however, it is well-known that higher levels than level-3 can generate IP packets. It would have been obvious to a person of ordinary skill in the art at the time of the invention to include packets generated at higher levels in the system disclosed by Gleeson et al.. One would have been motivated to do this because this would simplify some of the routing processes that otherwise would have to take place.

5. Claims 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gleeson et al. (US 5,959,989), hereinafter referred to as Gleeson.

Regarding claims 45, Gleeson discloses a method for efficiently distributing multicast messages having group destination address to subscribing entities in a computer network, which comprises:

Receiving a packet with a source MAC address and a TTL value (Referring to Figure 6, receiving frame 402a at a switch and converting to frame 610. See column 12, line 40 and column 13, line 52.)

Changing the source MAC address of the received packet (Referring to Figures 3, controller 306 deletes the MAC header comprising the MAC source address field, thereby changing the MAC address value to the null value. See column 13, lines 23-26.)

Gleeson does not disclose *forwarding the packet with the changed MAC address but with the same TTL value.*

Gleeson teaches the switch may, but doesn't have to, decrement the TTL value indicating that the switch may not participate or disable decrementing the TTL value that would result in maintaining the same value at a non-participating node (See column 13, lines 52-62.)

It would have been obvious to one of ordinary skill in the art at the time was made to implement packet forwarding with same TTL value in the system of Gleeson. One of ordinary skill in the art would have been motivated to do so in order to implement a router with a greater effective hop count limit to increase the effective propagation range of a datagram for communication with distant devices.

Regarding claim 46, the primary reference further teaches receiving a packet 402a at switch 220 of Fig. 2A comprising an IP multicast packet generated by Red VLAN entity 27. See also Fig. 4A, and col. 12, lines 21-32.

Regarding claim 47, the primary reference further teaches forwarding the packet received from Red VLAN entity 27 with the Red VLAN onto ports 3 and 5 of switch 220 in Fig. 2A. See col. 12, lines 45-65.

6. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gleeson et al. (US 5,959,989), hereinafter referred to as Gleeson in view of Virgile, further in view of Oguchi et al. (US 6,625,685) and in light of the rejection to claim 48.

Gleeson et al. discloses a switch according which can operate in a first mode, but Gleesen et al. does not expressly disclose where the switch can operate in a second mode in which interfaces are identified only by a VLAN. Oguchi et al. discloses a switch with a point-to-point type interface. See col. 9, lines 18-19. The routing table operates by identifying VLAN only. See Figs 4 and 5. It would have been obvious to a person of ordinary skill at the time of the invention to incorporate the feature taught by Oguchi et al. in the switching device of Gleeson et al.. One of ordinary skill in the art would have been motivated to do so in order to streamline the system design by reducing the memory requirements. An added benefit of doing so would result in reduced system costs and complexity, which are favorable to customers.

Response to Arguments

7. Applicant's arguments with respect to claims 1-17, 20-43, and 45-49 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L Mills whose telephone number is 571-272-3094. The examiner can normally be reached on 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Donald L Mills

DLM

February 6, 2005